EILAR ASSOCIATES

ACOUSTICAL & ENVIRONMENTAL CONSULTING

County of San Diego
Department of Planning and Land Use
Attention: Greg Krzys, Project Environmental Analyst
Zoning Center
5201 Ruffin Road, Suite B
San Diego, California 92123-1666

Project #A40808N4

June 22, 2005

SUBJECT: SWAIM SUBDIVISION; TM 5356; GRADING OPERATIONS NOISE IMPACT EVALUATION
9288 ADLAI ROAD
LAKESIDE, CA 92040

This letter is in response to the latest San Diego County response letter, dated May 19, 2005, requesting a supplemental evaluation of the noise impacts from grading operations associated with the proposed Swaim Subdivision to additionally include in the analysis the noise sensitive biological habitat area on the subject parcel. The section of the County letter regarding noise is included as Appendix A.

This noise analysis addresses the noise impacts from heavy equipment used during grading operations, noise impacts from heavy trucks transporting fill material, and noise impacts from project-related traffic. The noise analysis will also determine if noise mitigation is necessary and feasible for compliance with the applicable noise standards.

Project Description

The proposed project, known as the Swaim Subdivision, consists of the subdivision of a 4.5-acre parcel into nine single-family residential lots, in the City of Lakeside, in the County of San Diego, California. The preliminary grading plan shows the addition of a private drive with a cul-de-sac and an open space area located at the west end of the property.

Site Description

The project site is located at 9288 Adlai Road, in the City of Lakeside, California. The Assessor's Parcel Number (APN) for the property is 398-390-19-00. The overall property is approximately rectangular in shape and is approximately 230 feet wide (Adlai Road frontage) by 857 feet deep, with an overall site area of 4.5 acres. The legal description of the project site is "portion of Lot 14, Block 47, subdivision 'S' Tract, Rancho El Cajon, per map in book 170, page 71, of deeds."

The project property is currently vacant, ungraded land. The project proposes RS-3 (single-family residential) zoning. Existing neighboring land uses in the vicinity of the proposed project site are residential to the north and east, a park area to the west, and residential, agricultural and non-designated areas to the south. Planned neighboring land uses in the vicinity of the proposed project site are residential to the north, south, and east, and a park area to the west.

The nearest existing residences are along the northern property line of the project site, with the nearest residential building façade located 15 feet north of the property line.

On the subject parcel toward the west end, a noise sensitive biological habitat area has been identified by the biological analysis prepared by Pacific Southwest Biological Services, dated March 29, 2005.

The nearest circulation element roadways are Old Highway 80 and Lake Jennings Park Road. Highway 80 is a 2-lane, 2-way, major arterial, heading northeast-southwest. The roadway is approximately a half-mile southeast of the project site at its nearest point. The posted speed limit is 45 mph in the vicinity of the project site. Highway 80, in the vicinity of the project site, currently carries a traffic volume of approximately 8,931 Average Daily Trips (ADT), according to the Traffic Study for the Swaim Subdivision Project published by LOS Engineering Inc., dated February 23, 2005.

Lake Jennings Park Road is a 2-lane, 2-way, major arterial, heading northwest-southeast. The roadway is approximately a half-mile northeast of the project site at its nearest point. The posted speed limit is 55 mph in the vicinity of the project site. Lake Jennings Park Road, in the vicinity of the project site, currently carries a traffic volume of approximately 23,457 ADT, according to the Traffic Study for the Swaim Subdivision Project published by LOS Engineering Inc., dated February 23, 2005.

The project location is shown on the Thomas Guide map, Figure 1, following this report. An Assessor's parcel map, a satellite aerial photograph, and a topographic map of this area are also provided in Figures 2 through 4. The preliminary grading plan is provided as Appendix B.

Noise and Sound Level Descriptors

All noise level or sound level values presented herein are expressed in terms of decibels (dB), with A-weighting, abbreviated "dBA," to approximate the hearing sensitivity of humans. Time weighted averaged noise levels are expressed by the symbol L_{EQ}, for specified time duration. These data unit metrics are used to express noise levels for both measurement and municipal regulations, and for land use guidelines and enforcement of noise ordinances. Further explanation can be provided upon request.

Applicable Noise Standards

Section 36.410 of the County of San Diego Noise Ordinance states that construction equipment shall not be operated so as to cause average property line noise levels in excess of 75 dBA during the hours of 7 a.m. to 7 p.m. Please refer to Appendix C: Section 36.410 of the County of San Diego Noise Ordinance.

The San Diego County response letter, dated May 19, 2005, cites a U.S. Fish and Wildlife Service (USFWS) 60 dBA hourly noise limit to be applicable to the project related construction equipment noise impacts to the sensitive biological habitat area on the subject property.

The County guideline regarding noise generated by project-related traffic states that in urbanized residential areas with an existing traffic noise level of 60 CNEL or less, an increase to greater than 60 CNEL due to project-related traffic is considered significant. For areas with an existing traffic noise above 60 CNEL, an increase of 3 dB or more due to project-related traffic is considered significant.

Methodology

Barrier Insertion Loss Calculation

The grading equipment noise data and distance from the equipment to the receiver are used to calculate the sound pressure level due to divergence of sound waves in a free field. The noise attenuation, or insertion loss, achieved by a barrier is calculated as a single diffraction, by a thin barrier. This insertion loss is subtracted from the aforementioned sound pressure level to determine the sound pressure level with the barrier in place. Specific local atmospheric and environmental effects are not considered in these calculations. Noise receiver elevations were modeled at 5 feet above ground level elevation.
Roadway Noise Calculation

Roadway noise levels for the analysis involving trucks transporting fill material were determined using the Sound32 Release 1.41 program released by the California Department of Transportation, Division of New Technology, Materials and Research was used to calculate the future daytime average hourly noise level (HNL) at various locations at the project site. The daytime average hourly traffic volume is calculated as 0.058 times the ADT, based on the studies made by Wyle Laboratories (see reference). The HNL is equivalent to the L_{EQ}, and both are converted to the CNEL by adding 2.0 decibels, as shown in the Wyle Study. Future CNEL is calculated for desired receptor locations using future road alignment, elevations, lane configurations, projected traffic volumes, estimated truck mixes, and vehicle speeds. Noise attenuation methods may be analyzed, tested, and planned with Sound32, as required. Further explanation can be supplied on request.

Grading Operations and Schedule

Details of the anticipated grading operations and schedule are outlined in a revised letter by the applicant, which is included in Appendix D. The grading operations for this project will involve the on-site handling of approximately 18,000 cubic yards of soil. The soils report does not indicate large rocks on the site and, therefore, no blasting, excavators, rams, or other means will be employed for rock removal.

The grading process consists of two main phases. The first phase will be rough grading, lasting for approximately three weeks. This will involve grading operations utilizing native materials at the site. The expected duration of the pad preparation during the rough grading is approximately four hours per pad. The rough grading will involve the simultaneous use of the heavy equipment listed below.

Phase 1:

- Two Caterpillar 613 Scrapers
- One Caterpillar D6L Bulldozer with Compactor
- One Water Truck

The second phase will involve spreading and compacting of imported fill material. The expected duration of the pad preparation during the spreading and compacting is approximately two hours per pad. This will involve the use of the heavy equipment listed below.

Phase 2:

- One Caterpillar D6L Bulldozer with Compactor

Grading Operations Noise Impacts

Table 1 summarizes the typical noise emission levels for the equipment types listed above.

Table 1. Construction Equipment Noise Levels

Equipment	Range of Noise Levels at 50 Feet	Nominal Noise Level at 50 Feet	Height of Noise Source
Caterpillar 613 Scraper	73 to 95 dBA	88 dBA	12 feet
Caterpillar D6L Bulldozer	72 to 96 dBA	86 dBA	12 feet
Water Truck	79 to 88 dBA	75 dBA	3 feet

Source: Wieland Associates, 1999

Please refer to Appendix E for additional construction equipment noise levels.

The grading operations during Phase 1 are expected to generate higher noise levels than the subsequent operations. Due to the size of the lots and equipment, only one piece of equipment will operate in the same general location at any one time. An exception to this would be when the water truck passes through the grading area.

Noise Impacts to Adjacent Residences

A previous San Diego County response letter dated December 9, 2004, requests a brief analysis for the grading preparation of Lot 2 and its noise impacts to the northern property line of Lot 2. However, it is expected that Lots 1 and 3, adjacent to Lot 2 may be simultaneously undergoing grading work. Therefore, a worst-case scenario for noise impacts at the nearest residential property was evaluated, for simultaneous heavy equipment activity on Lots 1, 2, and 3. This scenario consists of Caterpillar 613 Scrapers in the centers of Lots 1 and 3, a Caterpillar D6L Bulldozer in the center of Lot 2, and a water truck in the southern area of Lot 2.

For a typical 1-hour period of grading operations, the applicant expects the equipment to operate simultaneously for up to 50% of that time. An assumption of an ambient noise level of 45 dBA was used to determine the 1-hour L_{EQ}.

When the heavy equipment is operated as described above for 4 hours simultaneously, the average 1-hour equivalent noise level will be as high as 84 dBA at the northern property line. The average 1-hour equivalent noise level will be as high as 83 dBA at the nearest residential building facade. Table 2 summarizes the heavy equipment noise impacts. Please refer to Figure 5 for the Preliminary Grading Plan showing heavy equipment and receiver locations. Please also refer Appendix F: Noise Analysis and Calculations.

Table 2. Heavy Equipment Noise Impacts to Nearest Residential Property		
Noise Source	Unmitigated Noise Level at Property Line (R1)	Unmitigated Noise Level at Nearest Residential Building Façade (R2)
Caterpillar 613 Scraper on Lot 1	77 dBA	77 dBA
Caterpillar D6L Bulldozer on Lot 2	86 dBA	84 dBA
Water Truck on Lot 2	70 dBA	69 dBA
Caterpillar 613 Scraper on Lot 3	78 dBA	77 dBA
All Equipment	87 dBA	86 dBA
All Equipment Operating 50% of 1-hr Period	84 dBA, 1-hr L_{EQ}	83 dBA, 1-hr L_{EQ}

The location of equipment on-site represents a realistic worst-case scenario for property line and nearby residence noise impacts. The average one-hour equivalent noise level of the construction equipment will exceed 75 dBA at the northern property line, and will therefore require mitigation in the form of a sound attenuation barrier.

Noise Impacts to Sensitive Biological Habitat Area

The most recent San Diego County response letter dated May 19, 2005, requests a supplemental evaluation of the noise impacts from grading operations associated with the proposed Swaim Subdivision to additionally include in the analysis the noise sensitive biological habitat area on the west end of the subject parcel.

A second alternative worst-case scenario for noise impacts within the biological habitat area was evaluated for simultaneous heavy equipment activity on Lots 4, 5, and 6. This scenario consists of Caterpillar 613 Scrapers in the centers of Lots 4 and 5, a Caterpillar D6L Bulldozer in the center of Lot 6, and a water truck between Lots 4 and 6.

For a typical 1-hour period of grading operations, the applicant expects the equipment to operate simultaneously for up to 50% of that time. An assumption of an ambient noise level of 45 dBA was used to determine the 1-hour L_{EQ}.

When the heavy equipment is operated as described above simultaneously, the average 1-hour equivalent noise level will be as high as 83 dBA near the eastern boundary of the noise sensitive biological habitat.

Table 3 summarizes the heavy equipment noise impacts to the sensitive biological habitat. Please refer to Figure 5 for the Preliminary Grading Plan showing heavy equipment and receiver locations. Please also refer Appendix F: Noise Analysis and Calculations.

Table 3. Heavy Equipment Noise Impacts to Sensitive Biological Habitat	
Noise Source	Unmitigated Noise Level at Eastern Boundary (R3)
Caterpillar 613 Scraper on Lot 4	81 dBA
Caterpillar 613 Scraper on Lot 5	82 dBA
Caterpillar D6L Bulldozer on Lot 6	78 dBA
Water Truck Between Lots 4 and 6	69 dBA
All Equipment	86 dBA
All Equipment Operating 50% of 1-hr Period	83 dBA, 1-hr L_{EQ}

The location of equipment on-site represents a realistic worst-case scenario for noise impacts to the sensitive biological habitat. The average one-hour equivalent noise level of the construction equipment will exceed 60 dBA near the eastern boundary of the sensitive biological habitat, and will therefore require mitigation in the form of a sound attenuation barrier.

Mitigation of Heavy Equipment Noise

Mitigation of Noise Impacts to Adjacent Residences

In order to reduce heavy equipment noise impacts to neighboring residences to 75 dBA or less, a temporary sound attenuation barrier is required along the northern property line during the planned project grading operations.

Calculations show that a barrier height of 15 feet will be sufficient to reduce noise impacts to approximately 75 dBA. The San Diego County response letter dated March 2, 2005 states that staff will support these findings.

With a 15-foot high sound attenuation barrier in place, the average one -hour equivalent noise level will be as high as 75 dBA at the nearest residential building facade. Table 4 summarizes the mitigated heavy equipment noise impacts. Please refer to Appendix F: Noise Analysis and Calculations.

Table 4. Mitigated Heavy Equipment Noise Impacts to Nearest Residential Property			
Noise Source	Unmitigated Noise Level at Nearest Residential Building Façade (R2)	Barrier Height	Mitigated Noise Level at Nearest Residential Building Façade (R2)
All Equipment Operating 50% of 1-hr Period	83 dBA, 1-hr L_{EQ}	15 feet	75 dBA, 1-hr L_{EQ}

This sound attenuation barrier shall be installed prior to the start of grading activities, and removed only after final inspection has been completed. The specified height shall be in reference to the existing northern property line elevation. The barrier should extend from the northeast corner of the project property, along the northern property line, to the northwest corner of the project property. Please refer to Figure 5: Preliminary Grading Plan Showing Heavy Equipment and Receiver Locations, and Recommended Sound Attenuation Barrier.

Equipment used in construction shall be maintained in proper operating condition, and engines shall be equipped with appropriate mufflers. With the recommended temporary sound attenuation barrier, construction equipment noise levels will be at or below an average one -hour equivalent noise level of 75 dBA, in compliance with the County of San Diego regulations.

Mitigation of Noise Impacts to Sensitive Biological Habitat Area

The effectiveness of extending the 15-foot high temporary sound attenuation barrier along the eastern boundary of the sensitive biological habitat was evaluated for reducing heavy equipment noise impacts.

Calculations show that a barrier height of 15 feet will be sufficient to reduce the average one-hour equivalent noise impacts to approximately 70 dBA. However, the barrier height required to reduce heavy equipment noise impacts to the sensitive biological habitat to the USFWS limit of 60 dBA is considered to be impractical and economically infeasible.

Table 5 summarizes the mitigated heavy equipment noise impacts. Please refer to Appendix F: Noise Analysis and Calculations.

Table 5. Mitigated Heavy Equipment Noise Impacts to Sensitive Biological Habitat

Noise Source	Unmitigated Noise Level (R3)	Barrier Height	Mitigated Noise Level (R3)
All Equipment Operating 50% of 1-hr Period	83 dBA, 1-hr L_{EQ}	15 feet	70 dBA, 1-hr L_{EQ}

This sound attenuation barrier shall be installed prior to the start of grading activities, and removed only after final inspection has been completed. The specified height shall be in reference to the existing elevation of the eastern boundary of the sensitive biological habitat. The barrier should extend from the northern property line to the southern property line. Please refer to Figure 5: Preliminary Grading Plan Showing Heavy Equipment and Receiver Locations, and Recommended Sound Attenuation Barrier.

The sound attenuation wall should be a solid wall of masonry, wood, plastic, lexan, plexiglass, fiberglass, or material designed for sound barriers, or a combination of these materials with no cracks or gaps through or below the wall. Sound attenuation walls may be of more than one material, such as masonry topped with glass. If wood is used, it must be at least ⅞-inch thick or have a density of at least 3½ pounds per square foot, and it must be tongue-in-groove design or have any gaps or cracks filled or caulked. Any gate(s) must be designed with overlapping closures.

Project Generated Traffic Noise Impacts

According to the Traffic Study for the Swaim Subdivision Project published by LOS Engineering Inc., dated February 23, 2005, the proposed project will generate additional traffic along Los Coches Road, Old Highway 80, Lake Jennings Park Road, Lakeview Road, and Adlai Road, in the vicinity of the project site. The traffic study provides data for existing traffic, existing plus project generated traffic, and existing plus project generated plus cumulative traffic.

Calculations were performed to determine the net CNEL increase due to existing plus project generated traffic and existing plus project generated plus cumulative traffic.

These calculations show a maximum traffic noise increase of 0.3 dB for existing plus project generated traffic and 2 dB for existing plus project generated plus cumulative traffic. These increases to overall vehicle traffic noise to the surrounding area are less than 3 dB, and are therefore considered an insignificant impact. Tables 6 and 7 summarize the net CNEL increases for these roadway segments. Please also refer to Appendix G: Excerpts of Traffic Study by LOS Engineering Inc.

Table 6: Noise Impacts from Existing and Project-Related Traffic at Nearby Roadway Segments

Roadway Segment	Existing ADT	Existing + Project ADT	CNEL Increase
Los Coches Road from Interstate 8 to Old Highway 80	23,123	23,186	0.0 dB
Old Highway 80 from Los Coches Road to East Lakeview Road	8,931	9,003	0.0 dB
Old Highway 80 from East Lakeview Road to Lake Jennings Park Road	8,931	8,945	0.0 dB
Lake Jennings Park Road from Old Highway 80 to Interstate 8	23,457	23,467	0.0 dB
East Lakeview Road from Old Highway 80 to Adlai Road	2,844	2,930	0.1 dB
Adlai Road from East Lakeview Road to Project Access	1,282	1,372	0.3 dB

Table 7: Noise Impacts from Existing, Project-Related, and Cumulative Traffic at Nearby Roadway Segments			
Roadway Segment	Existing ADT	Existing + Project + Cumulative ADT	CNEL Increase
Los Coches Road from Interstate 8 to Old Highway 80	23,123	25,489	0.4 dB
Old Highway 80 from Los Coches Road to East Lakeview Road	8,931	11,429	1.1 dB
Old Highway 80 from East Lakeview Road to Lake Jennings Park Road	8,931	11,336	1.0 dB
Lake Jennings Park Road from Old Highway 80 to Interstate 8	23,457	27,670	0.7 dB
East Lakeview Road from Old Highway 80 to Adlai Road	2,844	3,598	1.0 dB
Adlai Road from East Lakeview Road to Project Access	1,282	2,025	2.0 dB

Fill Material Transportation Operations and Noise Impacts

Details of the anticipated fill material transportation operations are outlined in a revised letter by the applicant, which is included in Appendix D.

A total of 9,000 cubic yards of soil will be imported, and no soil will be exported. Dump trucks will be used for approximately 90 days delivering an average of 8 loads per day, with a maximum of 10 loads per day. Normally, only one dump truck will be used, therefore the deliveries will occur throughout the day. For a typical 8-hour workday, this will result in an additional average heavy truck traffic volume of two trips per hour for the areas along the truck route.

Trucks transporting fill material will enter and exit the site from Adlai Road. The expected truck route is as follows: Interstate 8 (east and west) to Los Coches Road to Business Route 80 to East Lakeview Road to Adlai Road.

An analysis using a simple Sound 32 model was conducted to determine the net CNEL increase to existing traffic noise impacts from circulation element roadways along the truck route due to additional heavy truck traffic for the importation of fill material. A Sound 32 model was required for this in order to account for the differing noise emissions of heavy trucks as compared to the overall traffic noise emissions. The model consists of a generic 400-foot long roadway segment as a typical line noise source, with a receiver at an elevation of five feet at a distance of 20 feet from the curb, or 35 feet from the roadway centerline.

Existing traffic volumes were obtained from the Traffic Study for the Swaim Subdivision Project published by LOS Engineering Inc. Existing truck percentages of 4.0% medium and 1.0% heavy were used as

recommended by the response letter, dated March 2, 2005 from the San Diego County Department of Planning and Land Use.
The analysis results show a maximum traffic noise increase of 0.2 dB. This increase to overall existing vehicle traffic noise is less than 3 dB, and therefore considered an insignificant impact.

Table 8 summarizes the CNEL increases for the roadway segments along the truck route.

Table 8: Noise Impacts from Additional Heavy Truck Traffic for the Importation of Fill Material	
Roadway Segment	CNEL Increase
Los Coches Road from Interstate 8 to Old Highway 80	0.1 dB
Old Highway 80 from Los Coches Road to East Lakeview Road	0.2 dB

For further details please refer to Appendix H: Sound32 Data and Results.

Additional Limitations

Construction activities shall be limited to the following hours: 7 a.m. to 7 p.m., Monday through Saturday (except legal holidays). There will be no construction activity on Sunday. Fences and gates must be installed as a control feature to limit after hours access to the construction site. The fence should be installed to surround the project property along the western, southern and eastern property lines. The recommended sound attenuation barrier will also serve to limit access to the construction site along the northern property line.

Certification

The findings and recommendations of this acoustical analysis report are based on the information available and are a true and factual analysis of the acoustical issues addressed for the proposed Swaim Subdivision. This report was prepared by Michael Burrill, Justin Smith, and Douglas Eilar.

EILAR ASSOCIATES

Justin Smith, Acoustical Consultant

Douglas Eilar, Principal

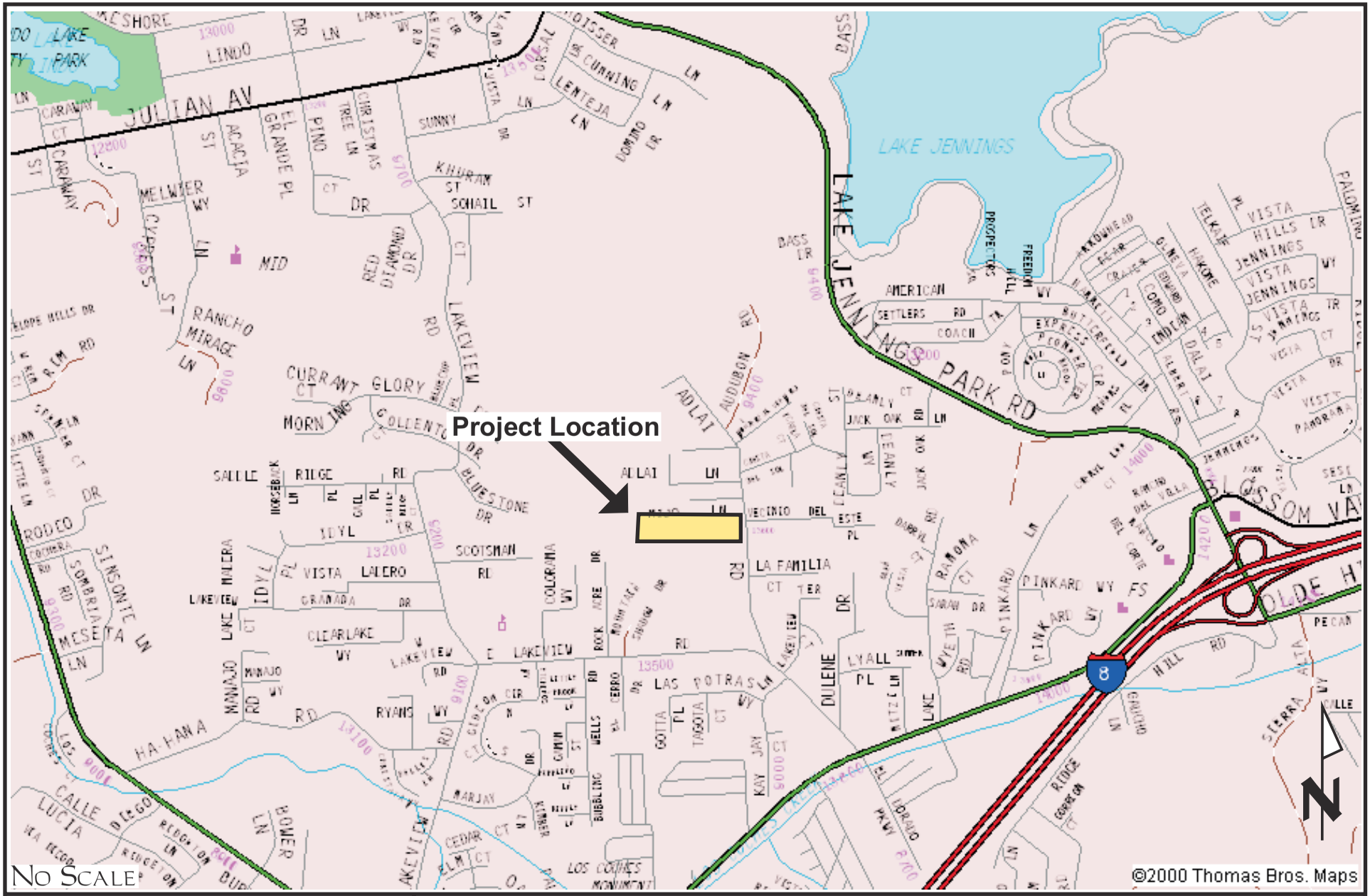
Figures

1. Thomas Guide Map
2. Assessor's Parcel Map
3. Satellite Aerial Photograph
4. Topographic Map
5. Preliminary Grading Plan Showing Heavy Equipment and Receiver Locations, and Recommended Sound Attenuation Barrier

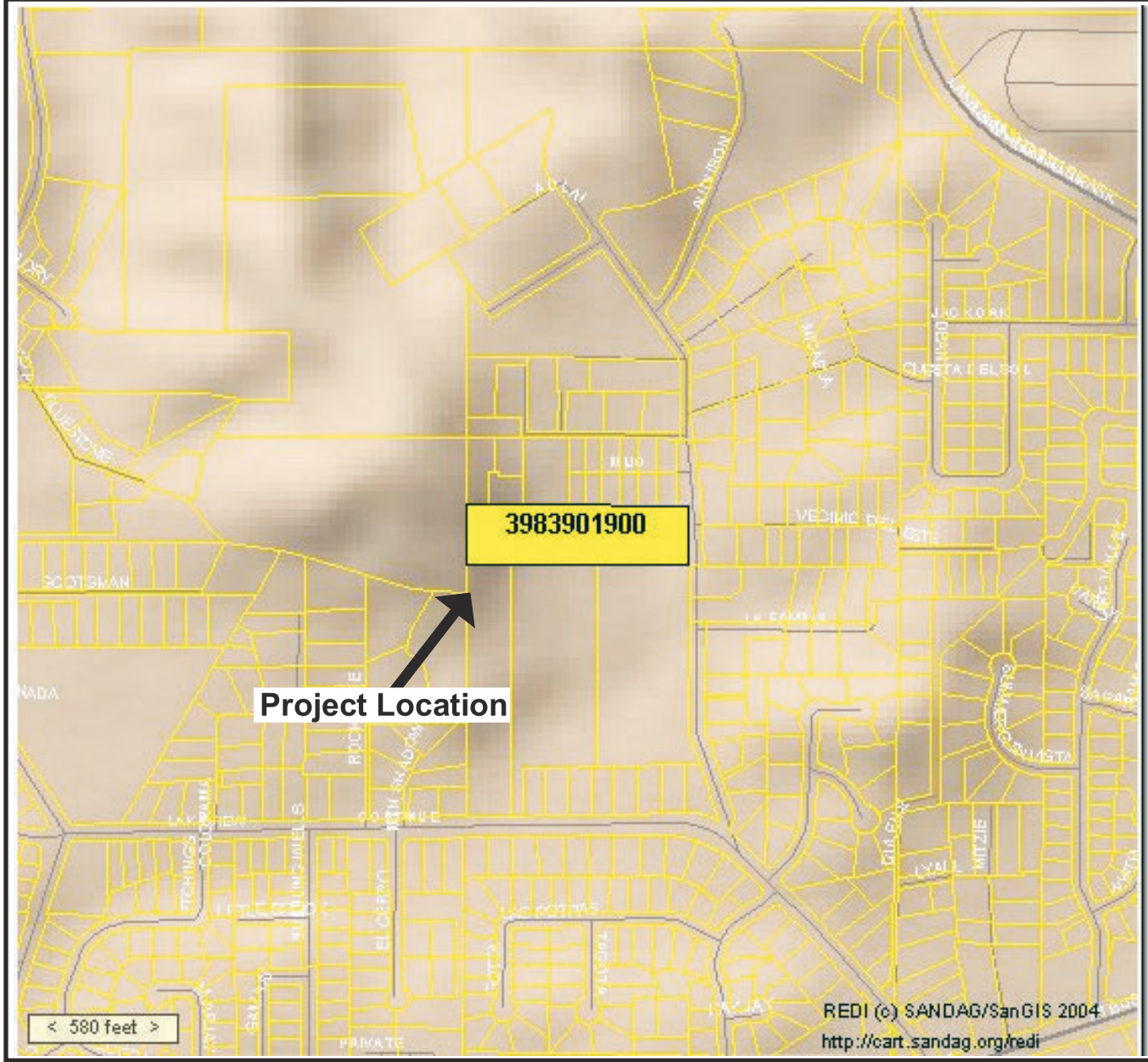
Appendices

A. Excerpt of County Letter Regarding Noise
B. Preliminary Grading Plan
C. Section 36.410 of the County of San Diego Noise Ordinance
D. Applicant Letter Regarding Grading Operations
E. Table of Construction Equipment Noise Levels
F. Noise Analysis and Calculations
G. Excerpts of Traffic Study by LOS Engineering Inc.
H. Sound32 Data and Results

FIGURES



Eilar Associates **539 Encinitas Boulevard, Suite 206** **Encinitas, California 92024** **760-753-1865**	**Thomas Guide Map** **Job # A40808N2**	**Figure 1**



LEGEND

Reference Layers

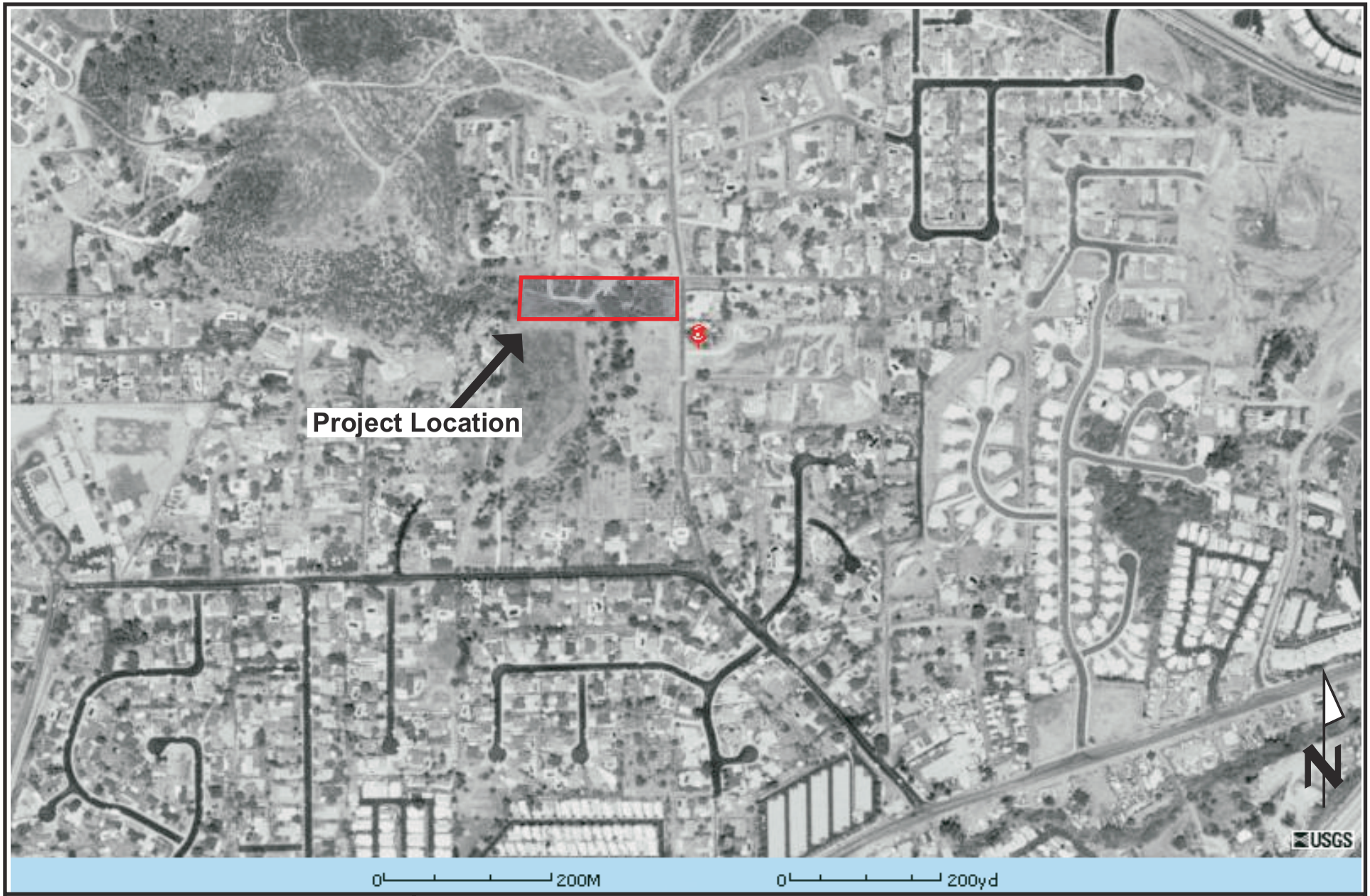
Parcels

Roads

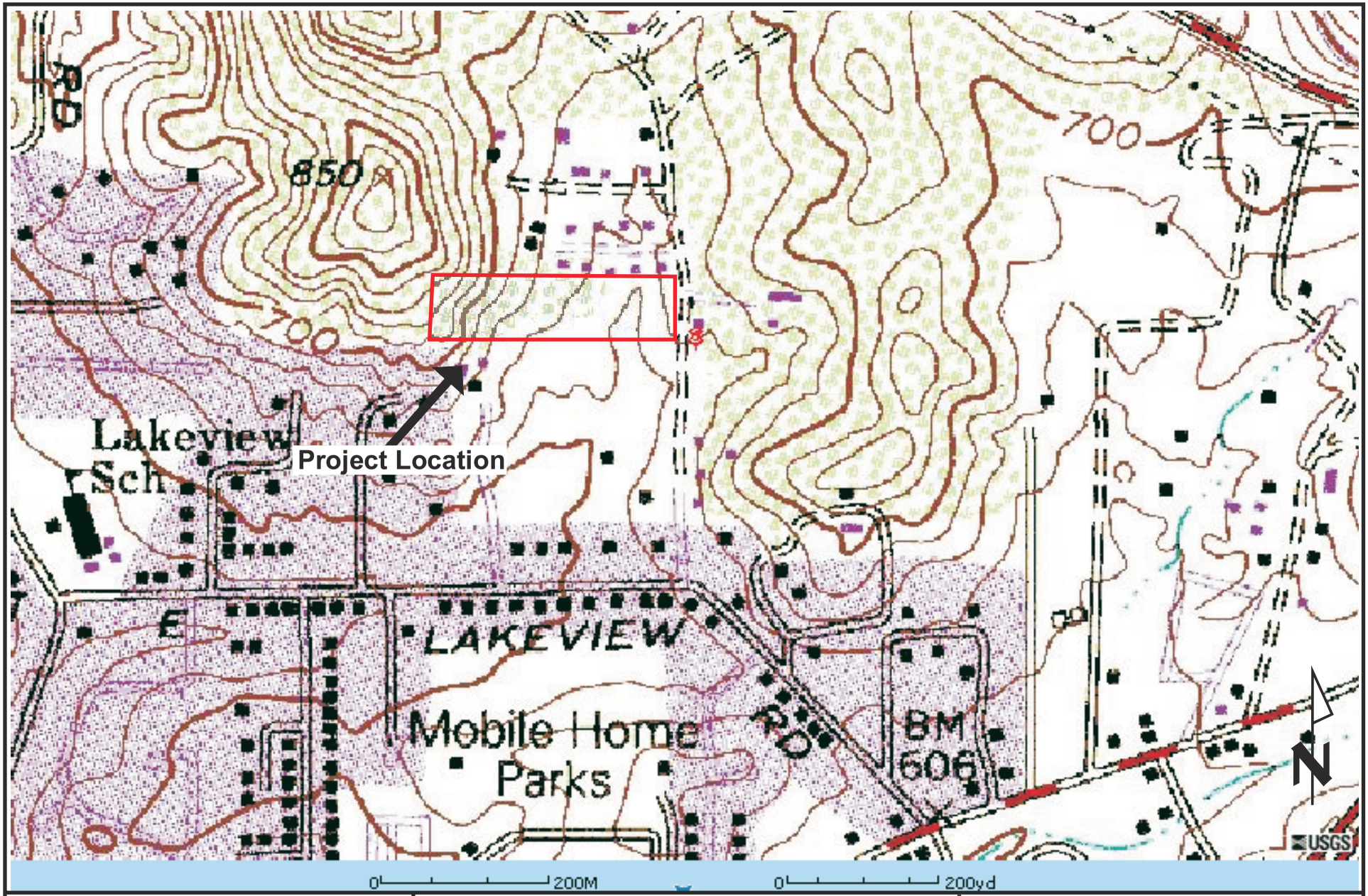
APN: 398-390-19-00

N

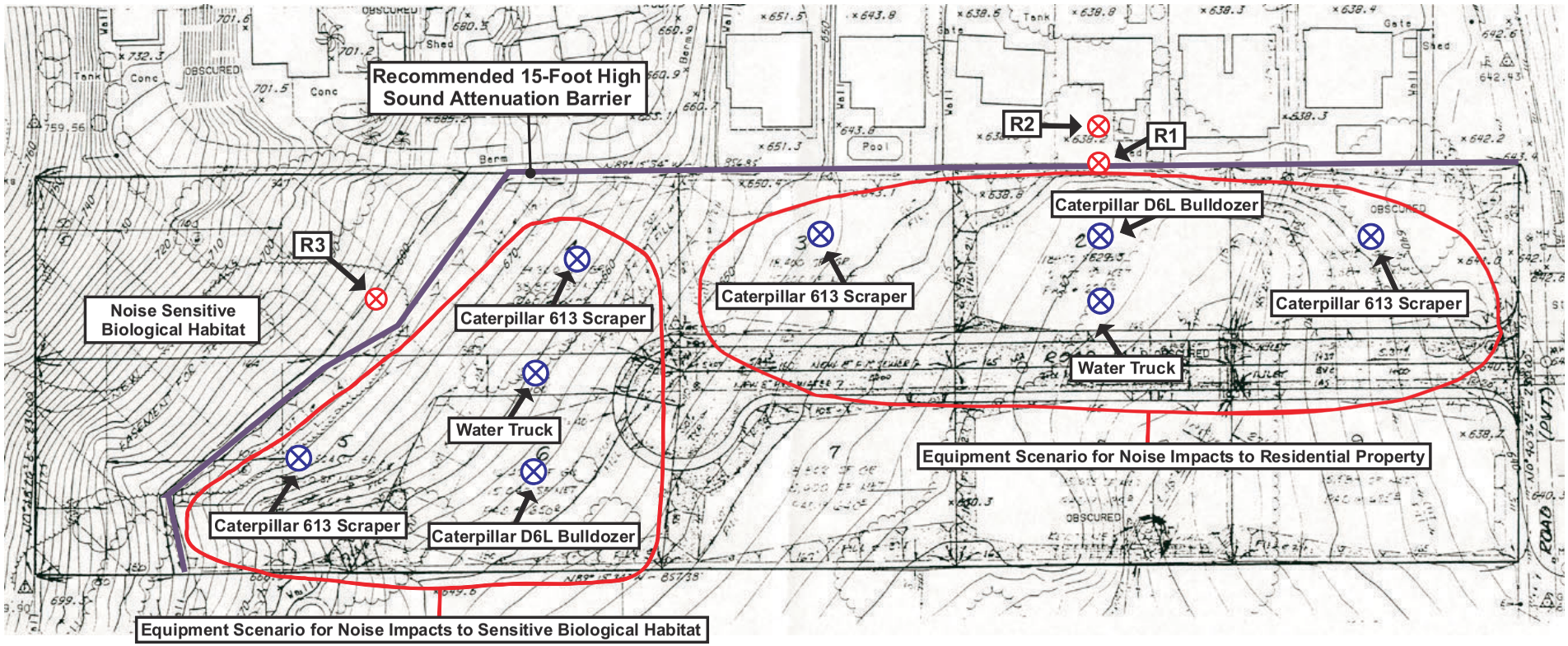
Eilar Associates 539 Encinitas Boulevard, Suite 206 Encinitas, California 92024 760-753-1865	Assessor's Parcel Map Job # A40808N2	Figure 2



Eilar Associates 539 Encinitas Boulevard, Suite 206 Encinitas, California 92024 760-753-1865	Satellite Aerial Photograph Job # A40808N2	Figure 3



Eilar Associates 539 Encinitas Boulevard, Suite 206 Encinitas, California 92024 760-753-1865	Topographic Map Job # A40808N2	Figure 4



Heavy Equipment Noise Impacts to Sensitive Biological Habitat			
Noise Source	Unmitigated Noise Level (R3)	Barrier Height	Mitigated Noise Level (R3)
All Equipment Operating 50% of 1 hr Period	83 dBA, 1 hr L_{EQ}	15 feet	70 dBA, 1 hr L_{EQ}

Heavy Equipment Noise Impacts to Nearest Residential Property				
Noise Source	Unmitigated Noise Level at Northern Property Line (R1)	Unmitigated Noise Level at Nearest Residential Building Façade (R2)	Barrier Height	Mitigated Noise Level at Nearest Residential Building Façade (R2)
All Equipment Operating 50% of 1 hr Period	84 dBA, 1 hr L_{EQ}	83 dBA, 1 hr L_{EQ}	15 feet	75 dBA, 1 hr L_{EQ}

No Scale

Eilar Associates
539 Encinitas Boulevard, Suite 206
Encinitas, California 92024
760-753-1865

Preliminary Grading Plan Showing Heavy Equipment and Receiver Locations, and Recommended Sound Attenuation Barrier
Job # A40808N4

Figure 5

APPENDIX A

Excerpt of County Letter Regarding Noise

GARY L. PRYOR
DIRECTOR

County of San Diego

DEPARTMENT OF PLANNING AND LAND USE

5201 RUFFIN ROAD, SUITE B, SAN DIEGO, CALIFORNIA 92123-1666
INFORMATION (858) 694-2960
TOLL FREE (800) 411-0017

NORTH COUNTY OFFICE
338 VIA VERA CRUZ • SUITE 201
SAN MARCOS, CA 92069-2620
(760) 471-0730

EAST COUNTY OFFICE
200 EAST MAIN ST. • SIXTH FLOOR
EL CAJON, CA 92020-3912
(619) 441-4030

#1533
5-8-05

May 19, 2005

Walter Dean
PO Box 21066
El Cajon, Ca 92021

RE: TM 5356 THIRD ITERATION REVIEW OF INITIAL STUDIES/INFORMATION

Dear Mr. Dean:

The Department of Planning and Land Use (DPLU) has completed the review of your Extended Initial Study/Information and determined it to be "complete" as defined by the California Environmental Quality Act (CEQA). At this time, staff will draft MSCP findings and finalize the required CEQA documentation.

REVISIONS AND ADDITIONAL INFORMATION:

BIOLOGY: Staff has reviewed the vegetation map and biology report completed by Pacific Southwest Biological Services, and submitted to the County on March 29, 2005. The biology report is accepted.

NOISE: Staff reviewed the revised Grading Noise Impact Evaluation by Eilar Associates submitted April 1, 2005 for the Swaim Tentative Map 5356RPL1. Staff considers the study complete except for two major discrepancies. Project(s)-related traffic is not expected to produce either significant direct or cumulative noise impacts with a maximum estimated CNEL increase of 2 decibels (A) to existing residences. One discrepancy is from the County Noise Ordinance (Section 36.410) that was changed in February with a revised property line limit of 75 decibels (dBA) for the one-hour average noise levels within the specified hours. Staff agrees with the current findings that the applicant should install a 15-foot tall temporary noise attenuation barrier along the northern boundary as shown in Figure 5 of the Eilar Associates Evaluation. However, the other discrepancy is from the biological analysis of the site where the presence of

noise sensitive habitat ("a noise sensitive area") was noted on Lots 5 and 6 and the neighboring parcel. This new information is a practical concern to the project since the proposed barrier would not be allowed in one portion of the project (if it is a dedicated open space). Staff still supports the minimum barrier height of 15 feet as suitable for Ordinance purposes but it would not be sufficient for noise sensitive habitat. Staff suggests that a short discussion be included as a separate addendum for biological issues. Staff has the following comments:

1. Update the Evaluation to include the revised standards of the County Noise Ordinance (Section 36.410b). The update would include Appendix C, Table 2, Table 3, and the discussion on page 4.

2. Include a short appendix for indirect biological noise impacts that incorporates the following items: the 60-decibel hourly standard (USFWS) or a reference to the approved biological studies for this project, the potential relocation of the 15-foot tall temporary noise barrier away from the dedicated open space area on Lots 5 and 6, and a brief statement about the unsuitability of the proposed barrier to reduce construction noise levels to meet the habitat standard. To avoid a major revision, staff suggests that the appendix be based on a modified Figure 5 with footnotes. Staff would accept a reference to this appendix in the main report with a footnote on page 4 under "Applicable Noise Standards". Staff may be available to examine a draft version of these revisions to expedite the project processing of this report.

These changes can be made on the documents prior to public review. Staff strongly suggests that one draft copy with these revisions be supplied to the County DPLU for review before making all of the required public review copies. Please let staff know if this will occur and a special handling form will be placed at the counter.

STORMWATER MANAGEMENT

The Storm Water Management Plan (SWMP), submitted April 1, 2005, was reviewed by DPW. The concerns of our February 10, 2005 letter are addressed and DPW has no other comments.

If you have any questions regarding these comments, please contact Dorian Kunch at 858-694-3248.

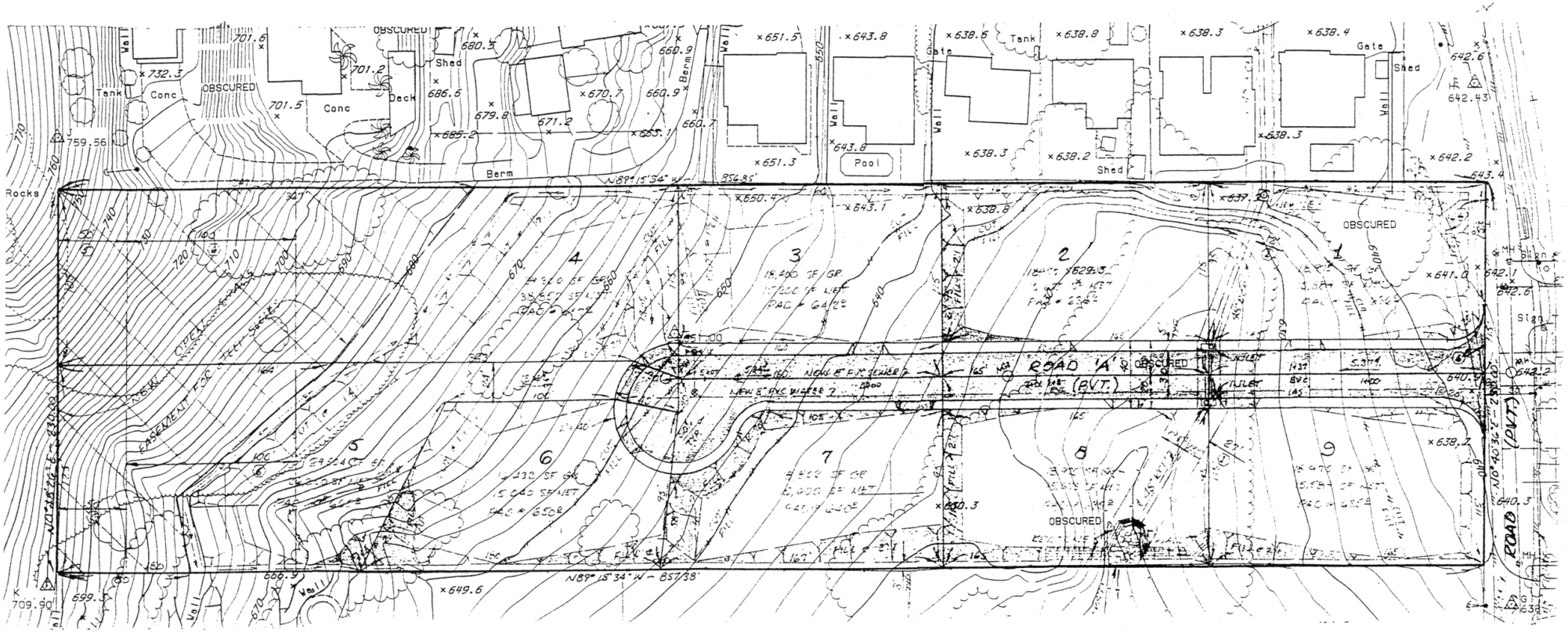
TRAFFIC STUDY

The traffic study has been reviewed by DPW and DPLU. The study is accepted with the following revision: Please update the study with the cumulative Traffic Impact Fee language contained in the May 6, 2005 comment letter. A draft copy of the report may be submitted to the County for review prior to submitting all of the public review copies. Please let staff know if this will occur and a special handling form will be placed at the counter.

APPENDIX B

Preliminary Grading Plan

COUNTY OF SAN DIEGO TRACT Nº 5356



APPENDIX C

Section 36.410 of the County of San Diego Noise Ordinance

ORDINANCE NO. 9700 (NEW SERIES)

AN ORDINANCE AMENDING SECTION 36.410 OF THE SAN DIEGO COUNTY CODE RELATED TO THE OPERATION OF CONSTRUCTION EQUIPMENT AND ADDING SECTION 375.20 TO THE ADMINISTRATIVE CODE RELATED TO THE ROLES OF STAFF AND COUNTY COUNSEL

The Board of Supervisors of the County of San Diego ordains as follows:

Section 1. The Board of Supervisors finds and determines that it is desirable to (1) clarify the hours of operation and noise standards for construction equipment found at Section 36.410 of the San Diego County Code, and (2) add Section 375.20 to the Administrative Code concerning the role of staff and County Counsel in providing advice and recommendations to decision making bodies.

Section 2. Section 36.410 of the San Diego County Code is hereby amended to read as follows:

SEC. 36.410. CONSTRUCTION EQUIPMENT.

Except for emergency work,

(a) It shall be unlawful for any person to operate construction equipment between the hours of 7 p.m. of any day and 7 a.m. of the following day.

(b) It shall also be unlawful for any person to operate construction equipment on Sundays, and days appointed by the President, Governor, or the Board of Supervisors for a public fast, Thanksgiving, or holiday, but a person may operate construction equipment on the above-specified days between the hours of 10 a.m. and 5 p.m. at his residence or for the purpose of constructing a residence for himself, provided that the average sound level does not exceed 75 decibels during the period of operation and that the operation of construction equipment is not carried out for profit or livelihood.

(c) It shall also be unlawful to operate any construction equipment so as to cause at or beyond the property line of any property upon which a legal dwelling unit is located an average sound level greater than 75 decibels between the hours of 7 a.m. and 7 p.m.

Section 3. Section 375.20 is hereby added to the Administrative Code to read as follows:

Section 375.20 ROLES OF STAFF AND COUNSEL.

The Directors and staff of the Departments of Planning and Land Use, Public Works, Environmental Health and others making reports and recommendations to the decision making body and the County Counsel and his or her deputies are charged with performing fair and impartial analyses to assist the decision making bodies in implementing the applicable laws, ordinances, and regulations. They are not partisans or advocates on one side or the other of a land use dispute.

They are charged with interpreting Federal, State, and particularly County laws, investigating all relevant issues, receiving all information, gathering and producing technical and professional advice, weighing competing interests, and presenting to the decision making bodies advice and recommendations within their respective areas of professional responsibility and competence, which in their professional judgment will best protect the interests of the County of San Diego. Staff and Counsel shall act at all times relating to the hearing process in an investigatory and advisory capacity, rather than a prosecutorial or adversarial one. They are to act in this neutral manner at all levels of the decision making process and provide the decision making body with professional and impartial advice and recommendations regardless of what other decisions may have been made at lower levels.

Section 4. This Ordinance shall take effect and be in force 30 days after the date of its passage, and before the expiration of 15 days after its passage, a summary shall be published once with names of the members voting for and against the same in the *San Diego Commerce,* a newspaper of general circulation published in the County of San Diego.

PASSED, APPROVED AND ADOPTED this 5th day of January 2005.

APPENDIX D

Applicant Letter Regarding Grading Operations

RDS
UNLIMITED
(619) 443-0221 • Fax (619) 443-0448
Construction & Development

January 18, 2005

Mr. Justin Smith
Acoustical Engineer
Eilar Associates
539 Encinitas Boulevard, Suite 206
Encinitas, Ca 92024

Re: Response to Noise Questions

Dear Mr. Smith,

After receiving your letter and reviewing the comments from the County of San Diego, we have discussed our site grading needs with a grading contractor to better determine the requirements for site grading. Equipment used at the site will include:

2 each, Caterpillar 613 Scrapers
1 each, Caterpillar D6L Bulldozer with Sheepsfoot Compactor
1 each, Water Truck

As you will recognize this is quite a bit different than we provided previously. However, due to the small size of the site and the relatively small amount of grading proposed, the above listed equipment would be more appropriate for the task.

The grading process will require approximately 3 weeks to complete earth moving activities utilizing native materials at the site. Import of materials (approximately 9,000 cubic yards will occur over an approximate 90-day period (week days 8 AM to 4 PM). This will result in deliveries averaging 8 truck trips per day with a maximum of 10 truck trips (one way) per day.

The following information is provided in response to your questions.

- Rough grading will involve the simultaneous use of the equipment listed above. As such, the actual equipment requirement will be somewhat less than we anticipated previously.

- Typically, only one piece of equipment will operate in the same general location at any one time. An exception to this would be when the water truck would be passing through the grading area. The greatest area of exposure will be adjacent to the property lines on pads 1 through 4. However, the use of equipment in these locations will be for short periods of time over the first three weeks when initial site grading is in progress. After the initial grading of the site, fill materials will be

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delivered to the site on a daily basis by over-the-road trucks. This material will be stockpiled for up to a week before being spread and compacted with the D6L bulldozer. The bulldozer operations will require approximately 4 hours per week to complete. Water will be provided by a construction meter and fire hose. No water truck would be necessary for fill compaction activities.

- Fill materials will originate from a number of possible sites in the Lakeside area. The probable transportation route is as follows:

    - Interstate 8 to Los Coches Road (east and west)
    - Los Coches Road north to Business Route 80
    - Business Route 80 east to East Lakeview Road
    - East Lakeview Road north to Adlai Road

  As described previously, an average of 8 truck trips per day will be required with a maximum of 10 truck trips on any given day. Truck deliveries of fill materials will occur be 8:00 AM and 4:00 PM on weekdays. Truck delivers would normally involve only one truck transporting up to 10 loads per day. As such, deliveries would occur throughout the day.

Please call me as soon as possible if you have questions. Our resubmittal date is rapidly approaching and we hope to meet this deadline without delay.

Sincerely,

Ronnie D. Swaim

APPENDIX E

Table of Construction Equipment Noise Levels

Construction Equipment Noise Levels			
Equipment Item	**Range of Noise Level at 50 Feet**	**Nominal Noise Level, L_{EQ}, at 50 Feet**	**Height of Noise Source**
Earthmoving			
Backhoes/Excavator, 200 HP	71 to 93 dBA	85 dBA	12 feet
Berm Machine, 100 HP	74 to 84 dBA	80 dBA	
Dozers (Caterpillar D8)	72 to 96 dBA	86 dBA	12 feet
Front Loaders, 300 HP	71 to 96 dBA	85 dBA w/backup alarm	12 feet
Graders	73 to 95 dBA	75 dBA	8 feet
Paver	80 to 92 dBA	89 dBA	
Roller, 180 HP	78 to 84 dBA	79 dBA	
Scrapers (Caterpillar 623)	73 to 95 dBA	88 dBA	12 feet
Tractors, 200 HP	72 to 96 dBA	84 dBA	
Trencher, 80 HP	76 to 86 dBA	82 dBA	
Truck/Trailer, 200 HP	70 to 92 dBA	75 dBA	12 feet
Truck: 125 HP, 150 HP	76 to 85 dBA	80, 82 dBA	
Materials Handling			
Concrete Mixer	70 to 90 dBA	85 dBA	
Concrete Pump	74 to 84 dBA	82 dBA	
Crane, Moveable: 50 HP, 200 HP, 400 HP	75 to 95 dBA	76, 80, 83 dBA	
Derrick	86 to 89 dBA	88 dBA	
Forklift, 40 HP	68 to 82 dBA	80 dBA	
Side Boom, 200 HP	80 to 90 dBA	85 dBA	
Water Truck, 500 HP	79 to 88 dBA	75 dBA	3 feet
Stationary Equipment			
Boiler, 1600 HP	79 to 85 dBA	82 dBA	
Compressors: 100 HP, 200 HP	68 to 87 dBA	78, 81 dBA	
Generators: 20 HP, 400 HP, 1300 HP	69 to 81 dBA	74, 81, 84 dBA	
Pumps: 25 HP, 200 HP, 350 HP	60 to 80 dBA	73, 76, 80 dBA	
Impact Equipment			
Compactor, 20 HP	84 to 90 dBA	86 dBA	8 feet
Jack Hammers	75 to 104 dBA	88 dBA	
Pile Drivers (Peak Level)	90 to 104 dBA	101 dBA	
Pneumatic Tools	82 to 88 dBA	86 dBA	
Rock Drills	90 to 105 dBA	98 dBA	
Steam Boiler (Pile Driver)	83 to 92 dBA	88 dBA	
Other Equipment			
Saws	67 to 92 dBA	78 dBA	
Vibrators	69 to 80 dBA	76 dBA	
Welding Machines: 50 HP, 80 HP	76 to 85 dBA	80, 82 dBA	

Source: Wieland Associates, 1999

APPENDIX F

Noise Analysis and Calculations

EILAR ASSOCIATES
ACOUSTICAL CONSULTING

Noise Attenuation by Distance Calculation

Job Name: Swaim Subdivision
Job Number: A40808N2
Date: 1-19-05
Source Description: Caterpillar 613 Scraper on Lot 1
Receiver Description: R1 - Northern Property Line of Lot 2

Noise Source						
Sound Pressure Level:	88	dBA	at	50	(ft)

Distances					
Source Height:	h_S =	648	(ft) (	12	ft above grade)
Receiver Height:	h_R =	643	(ft) (	5	ft above grade)
Source to Receiver Distance:	d_{SR} =	170	(ft)		

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**170**	(ft)

Sound Pressure Level	77	dBA	at	170	(ft)

Source Description: Caterpillar D6L Bulldozer on Lot 2
Receiver Description: R1 - Northern Property Line of Lot 2

Noise Source					
Sound Pressure Level:	86	dBA	at	50	(ft)

Distances					
Source Height:	h_S =	648	(ft) (	12	ft above grade)
Receiver Height:	h_R =	643	(ft) (	5	ft above grade)
Source to Receiver Distance:	d_{SR} =	50	(ft)		

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**50**	(ft)

Sound Pressure Level	86	dBA	at	50	(ft)

EILAR ASSOCIATES
ACOUSTICAL CONSULTING

Noise Attenuation by Distance Calculation

Job Name: Swaim Subdivision
Job Number: A40808N2
Date: 1-19-05
Source Description: Water Truck on Lot 2
Receiver Description: R1 - Northern Property Line of Lot 2

Noise Source						
Sound Pressure Level:	75	dBA	at	50	(ft)	

Distances						
Source Height:	h_S =	639	(ft) (	3	ft above grade)	
Receiver Height:	h_R =	643	(ft) (	5	ft above grade)	
Source to Receiver Distance:	d_{SR} =	85	(ft)			

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**85**	(ft)

Sound Pressure Level					
70	dBA	at	85	(ft)	

Source Description: Caterpillar 613 Scraper on Lot 3
Receiver Description: R1 - Northern Property Line of Lot 2

Noise Source					
Sound Pressure Level:	88	dBA	at	50	(ft)

Distances						
Source Height:	h_S =	654	(ft) (	12	ft above grade)	
Receiver Height:	h_R =	643	(ft) (	5	ft above grade)	
Source to Receiver Distance:	d_{SR} =	166	(ft)			

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**166**	(ft)

Sound Pressure Level					
78	dBA	at	166	(ft)	

EILAR ASSOCIATES
ACOUSTICAL CONSULTING

Barrier Insertion Loss Analysis

Job Name: Swaim Subdivision
Job Number: A40808N2
Date: 1-19-05
Source Description: Caterpillar 613 Scraper on Lot 1
Receiver Description: R2 - Residential Property North of Lot 2

Noise Source

Sound Pressure Level:	88	dBA	at	50	(ft)

Barrier Parameters

Source Height:	h_S =	648	(ft) (	12	ft above grade)
Barrier Height:	h_B =	653	(ft) (	15	ft above grade)
Receiver Height:	h_R =	643	(ft) (	5	ft above grade)
Horizontal Source to Barrier Distance:	d_{SB} =	142	(ft)		
Horizontal Barrier to Receiver Distance:	d_{BR} =	30	(ft)		

Path Calculations

Source to Barrier Edge Path Distance:	d_1 =	**142**	(ft)
Barrier to Receiver Diffracted Path Distance:	d_2 =	**32**	(ft)
Source to Receiver Direct Path Distance:	r =	**172**	(ft)

Barrier Insertion Loss Calculations

Octave Band	31	63	125	250	500	1000	2000	4000	8000	(Hz)
Wavelength: λ	36.45	17.94	9.04	4.52	2.26	1.13	0.57	0.28	0.14	(ft)
Fresnel Number: $N = (2/\lambda)[d_1 + d_2 - d]$	0.09	0.18	0.36	0.72	1.45	2.90	5.80	11.60	23.19	
Barrier Insertion Loss: $IL = 10\ log\ [3+10N]$	**8.2**	**6.8**	**8.2**	**10.1**	**12.4**	**15.1**	**17.9**	**20.0**	**20.0**	(dB)

Barrier Attenuation

Sound Pressure Level Without Barrier	77.3	dBA	at	172	(ft)
Overall Barrier Insertion Loss:	**10.9**	dB			
Sound Pressure Level With Barrier	66.4	dBA	at	172	(ft)

EILAR ASSOCIATES
ACOUSTICAL CONSULTING

Barrier Insertion Loss Analysis

Job Name: Swaim Subdivision
Job Number: A40808N2
Date: 1-19-05
Source Description: Caterpillar D6L Bulldozer on Lot 2
Receiver Description: R2 - Residential Property North of Lot 2

Noise Source

Sound Pressure Level:	86	dBA	at	50	(ft)

Barrier Parameters

Source Height:	h_S =	648	(ft) (	12	ft above grade)
Barrier Height:	h_B =	653	(ft) (	15	ft above grade)
Receiver Height:	h_R =	643	(ft) (	5	ft above grade)
Horizontal Source to Barrier Distance:	d_{SB} =	50	(ft)		
Horizontal Barrier to Receiver Distance:	d_{BR} =	10	(ft)		

Path Calculations

Source to Barrier Edge Path Distance:	d_1 =	**50**	(ft)
Barrier to Receiver Diffracted Path Distance:	d_2 =	**14**	(ft)
Source to Receiver Direct Path Distance:	r =	**60**	(ft)

Barrier Insertion Loss Calculations

Octave Band	31	63	125	250	500	1000	2000	4000	8000	(Hz)
Wavelength: λ	36.45	17.94	9.04	4.52	2.26	1.13	0.57	0.28	0.14	(ft)
Fresnel Number: N = (2/λ) [d_1 + d_2 -d]	0.23	0.47	0.93	1.85	3.70	7.40	14.81	29.62	59.24	
Barrier Insertion Loss: IL = 10 *log* [3+10N]	**10.9**	**8.8**	**10.9**	**13.3**	**16.0**	**18.9**	**20.0**	**20.0**	**20.0**	(dB)

Barrier Attenuation

Sound Pressure Level Without Barrier	84.4	dBA	at	60	(ft)
Overall Barrier Insertion Loss:	**13.4**	dB			
Sound Pressure Level With Barrier	71.0	dBA	at	60	(ft)

EILAR ASSOCIATES
ACOUSTICAL CONSULTING

Barrier Insertion Loss Analysis

Job Name: Swaim Subdivision
Job Number: A40808N2
Date: 1-19-05
Source Description: Water Truck on Lot 2
Receiver Description: R2 - Residential Property North of Lot 2

Noise Source

Sound Pressure Level:	75	dBA	at	50	(ft)

Barrier Parameters

Source Height:	h_S =	639	(ft) (3	ft above grade)	
Barrier Height:	h_B =	653	(ft) (15	ft above grade)	
Receiver Height:	h_R =	643	(ft) (5	ft above grade)	
Horizontal Source to Barrier Distance:	d_{SB} =	85	(ft)		
Horizontal Barrier to Receiver Distance:	d_{BR} =	10	(ft)		

Path Calculations

Source to Barrier Edge Path Distance:	d_1 =	**86**	(ft)
Barrier to Receiver Diffracted Path Distance:	d_2 =	**14**	(ft)
Source to Receiver Direct Path Distance:	r =	**95**	(ft)

Barrier Insertion Loss Calculations

Octave Band	31	63	125	250	500	1000	2000	4000	8000	(Hz)
Wavelength: λ	36.45	17.94	9.04	4.52	2.26	1.13	0.57	0.28	0.14	(ft)
Fresnel Number: $N = (2/\lambda)[d_1 + d_2 - d]$	0.29	0.58	1.15	2.30	4.60	9.21	18.42	36.84	73.67	
Barrier Insertion Loss: $IL = 10\ log\ [3+10N]$	**11.6**	**9.4**	**11.6**	**14.2**	**16.9**	**19.8**	**20.0**	**20.0**	**20.0**	(dB)

Barrier Attenuation

Sound Pressure Level Without Barrier	69.4	dBA	at	95	(ft)
Overall Barrier Insertion Loss:	**14.1**	dB			
Sound Pressure Level With Barrier	55.3	dBA	at	95	(ft)

EILAR ASSOCIATES
ACOUSTICAL CONSULTING

Barrier Insertion Loss Analysis

Job Name: Swaim Subdivision
Job Number: A40808N2
Date: 1-19-05
Source Description: Caterpillar 613 Scraper on Lot 3
Receiver Description: R2 - Residential Property North of Lot 2

Noise Source

Sound Pressure Level:	88	dBA	at	50	(ft)

Barrier Parameters

Source Height:	h_S =	654	(ft) (	12	ft above grade)
Barrier Height:	h_B =	653	(ft) (	15	ft above grade)
Receiver Height:	h_R =	643	(ft) (	5	ft above grade)
Horizontal Source to Barrier Distance:	d_{SB} =	140	(ft)		
Horizontal Barrier to Receiver Distance:	d_{BR} =	30	(ft)		

Path Calculations

Source to Barrier Edge Path Distance:	d_1 =	**140**	(ft)
Barrier to Receiver Diffracted Path Distance:	d_2 =	**32**	(ft)
Source to Receiver Direct Path Distance:	r =	**170**	(ft)

Barrier Insertion Loss Calculations

Octave Band	31	63	125	250	500	1000	2000	4000	8000	(Hz)
Wavelength: λ	36.45	17.94	9.04	4.52	2.26	1.13	0.57	0.28	0.14	(ft)
Fresnel Number: $N = (2/\lambda)\,[d_1 + d_2 - d]$	-0.07	-0.14	-0.28	-0.56	-1.12	-2.25	-4.50	-9.00	-17.99	
Barrier Insertion Loss: $IL = 10\ log\ [3+10N]$	**0.0**	**2.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	(dB)

Barrier Attenuation

Sound Pressure Level Without Barrier	77.4	dBA	at	170	(ft)
Overall Barrier Insertion Loss:	**0.2**	dB			
Sound Pressure Level With Barrier	77.2	dBA	at	170	(ft)

EILAR ASSOCIATES
ACOUSTICAL CONSULTING

Barrier Insertion Loss Analysis

Job Name: Swalm Subdivision
Job Number: A40808N4
Date: 6-21-05
Source Description: Caterpillar 613 Scraper on Lot 4
Receiver Description: R3 - Noise Sensitive Habitat

Noise Source

Sound Pressure Level:	88	dBA	at	50	(ft)

Barrier Parameters

Source Height:	h_S =	673	(ft) (	12	ft above grade)
Barrier Height:	h_B =	690	(ft) (	15	ft above grade)
Receiver Height:	h_R =	683	(ft) (	5	ft above grade)
Horizontal Source to Barrier Distance:	d_{SB} =	106	(ft)		
Horizontal Barrier to Receiver Distance:	d_{BR} =	10	(ft)		

Path Calculations

Source to Barrier Edge Path Distance:	d_1 =	**107**	(ft)
Barrier to Receiver Diffracted Path Distance:	d_2 =	**12**	(ft)
Source to Receiver Direct Path Distance:	r =	**116**	(ft)

Barrier Insertion Loss Calculations

Octave Band	31	63	125	250	500	1000	2000	4000	8000	(Hz)
Wavelength: λ	36.45	17.94	9.04	4.52	2.26	1.13	0.57	0.28	0.14	(ft)
Fresnel Number: $N = (2/\lambda)[d_1 + d_2 - d]$	0.17	0.35	0.69	1.39	2.77	5.54	11.08	22.17	44.33	
Barrier Insertion Loss: IL = 10 *log* [3+10N]	**10.0**	**8.1**	**10.0**	**12.3**	**14.9**	**17.7**	**20.0**	**20.0**	**20.0**	(dB)

Barrier Attenuation

Sound Pressure Level Without Barrier	80.7	dBA	at	116	(ft)
Overall Barrier Insertion Loss:	**12.6**	dB			
Sound Pressure Level With Barrier	68.1	dBA	at	116	(ft)

EILAR ASSOCIATES
ACOUSTICAL CONSULTING

Barrier Insertion Loss Analysis

Job Name: Swaim Subdivision
Job Number: A40808N4
Date: 6-21-05
Source Description: Caterpillar 613 Scraper on Lot 5
Receiver Description: R3 - Noise Sensitive Habitat

Noise Source

Sound Pressure Level:	88	dBA	at	50	(ft)

Barrier Parameters

Source Height:	h_S =	684	(ft) (	12	ft above grade)
Barrier Height:	h_B =	690	(ft) (	15	ft above grade)
Receiver Height:	h_R =	683	(ft) (	5	ft above grade)
Horizontal Source to Barrier Distance:	d_{SB} =	85	(ft)		
Horizontal Barrier to Receiver Distance:	d_{BR} =	10	(ft)		

Path Calculations

Source to Barrier Edge Path Distance:	d_1 =	**85**	(ft)
Barrier to Receiver Diffracted Path Distance:	d_2 =	**12**	(ft)
Source to Receiver Direct Path Distance:	r =	**95**	(ft)

Barrier Insertion Loss Calculations

Octave Band	31	63	125	250	500	1000	2000	4000	8000	(Hz)
Wavelength: λ	36.45	17.94	9.04	4.52	2.26	1.13	0.57	0.28	0.14	(ft)
Fresnel Number: $N = (2/\lambda)[d_1 + d_2 - d]$	0.13	0.27	0.53	1.07	2.14	4.27	8.54	17.08	34.16	
Barrier Insertion Loss: $IL = 10\ log\ [3+10N]$	**9.2**	**7.6**	**9.2**	**11.4**	**13.9**	**16.6**	**19.5**	**20.0**	**20.0**	(dB)

Barrier Attenuation

Sound Pressure Level Without Barrier	82.4	dBA	at	95	(ft)
Overall Barrier Insertion Loss:	**11.9**	dB			
Sound Pressure Level With Barrier	70.5	dBA	at	95	(ft)

EILAR ASSOCIATES
ACOUSTICAL CONSULTING

Barrier Insertion Loss Analysis

Job Name: Swaim Subdivision
Job Number: A40808N4
Date: 6-21-05
Source Description: Caterpillar D6L Bulldozer on Lot 6
Receiver Description: R3 - Noise Sensitive Habitat

Noise Source

Sound Pressure Level:	86	dBA	at	50	(ft)

Barrier Parameters

Source Height:	h_S =	666	(ft) (	12	ft above grade)
Barrier Height:	h_B =	690	(ft) (	15	ft above grade)
Receiver Height:	h_R =	683	(ft) (	5	ft above grade)
Horizontal Source to Barrier Distance:	d_{SB} =	118	(ft)		
Horizontal Barrier to Receiver Distance:	d_{BR} =	10	(ft)		

Path Calculations

Source to Barrier Edge Path Distance:	d_1 =	**120**	(ft)
Barrier to Receiver Diffracted Path Distance:	d_2 =	**12**	(ft)
Source to Receiver Direct Path Distance:	r =	**129**	(ft)

Barrier Insertion Loss Calculations

Octave Band	31	63	125	250	500	1000	2000	4000	8000	(Hz)
Wavelength: λ	36.45	17.94	9.04	4.52	2.26	1.13	0.57	0.28	0.14	(ft)
Fresnel Number: $N = (2/\lambda)[d_1 + d_2 - d]$	0.19	0.39	0.77	1.55	3.10	6.19	12.38	24.77	49.54	
Barrier Insertion Loss: $IL = 10\ log\ [3+10N]$	**10.3**	**8.4**	**10.3**	**12.7**	**15.3**	**18.1**	**20.0**	**20.0**	**20.0**	(dB)

Barrier Attenuation

Sound Pressure Level Without Barrier	77.8	dBA	at	129	(ft)
Overall Barrier Insertion Loss:	**12.9**	dB			
Sound Pressure Level With Barrier	64.8	dBA	at	129	(ft)

EILAR ASSOCIATES
ACOUSTICAL CONSULTING

Barrier Insertion Loss Analysis

Job Name: Swaim Subdivision
Job Number: A40808N4
Date: 6-21-05
Source Description: Water Truck on Between Lots 4 and 6
Receiver Description: R3 - Noise Sensitive Habitat

Noise Source

Sound Pressure Level:	75	dBA	at	50	(ft)

Barrier Parameters

Source Height:	h_S =	662	(ft) (	3	ft above grade)
Barrier Height:	h_B =	690	(ft) (	15	ft above grade)
Receiver Height:	h_R =	683	(ft) (	5	ft above grade)
Horizontal Source to Barrier Distance:	d_{SB} =	86	(ft)		
Horizontal Barrier to Receiver Distance:	d_{BR} =	10	(ft)		

Path Calculations

Source to Barrier Edge Path Distance:	d_1 =	**90**	(ft)
Barrier to Receiver Diffracted Path Distance:	d_2 =	**12**	(ft)
Source to Receiver Direct Path Distance:	r =	**98**	(ft)

Barrier Insertion Loss Calculations

Octave Band	31	63	125	250	500	1000	2000	4000	8000	(Hz)
Wavelength: λ	36.45	17.94	9.04	4.52	2.26	1.13	0.57	0.28	0.14	(ft)
Fresnel Number: $N = (2/\lambda)\,[d_1 + d_2 - d]$	0.24	0.49	0.97	1.94	3.88	7.75	15.50	31.01	62.02	
Barrier Insertion Loss: IL = 10 *log* [3+10N]	**11.0**	**9.0**	**11.0**	**13.5**	**16.2**	**19.1**	**20.0**	**20.0**	**20.0**	(dB)

Barrier Attenuation

Sound Pressure Level Without Barrier	69.1	dBA	at	98	(ft)
Overall Barrier Insertion Loss:	**13.6**	dB			
Sound Pressure Level With Barrier	55.6	dBA	at	98	(ft)

APPENDIX G

Excerpts of Traffic Study by LOS Engineering, Inc.

TABLE 4
SEGMENT ANALYSIS

Street Segment	Los Coches	Los Coches	Olde Hwy 80	Olde Hwy 80	Lake Jennings	E. Lakeview Rd	Adlai Rd
from	I-8	400' S. of Aurora	Los Coches	E. Lakeview Rd	Olde Highway 80	Olde Hwy 80	E. Lakeview Rd
to	400' S. of Aurora	Olde Highway 80	E. Lakeview Rd	Lake Jenning Rd	I-8	Adlai Rd	Project Access
Roadway Classification	Prime Arterial	Prime Arterial	Major	Major	Major	Non-Circulation	Non-Circulation
On Bicycle Network?	Yes	Yes	Yes	Yes	No	No	No
# of Lanes Currently Built	4 + CTWLTL	3 (See note 1)	2	2	2	2	2
LOS E Capacity (Circ)	34,200	25,200	16,200	16,200	16,200	NA	NA
LOS C Capacity (Non-Circ)	NA	NA	NA	NA	NA	4,500	1,500
Count Date	2005	2005	2003	2003	2003	2005	2005
Existing ADT	23,123	23,123	8,931	8,931	23,457	2,844	1,282
Volume to Capacity	0.676	0.918	0.551	0.551	1.448	0.632	0.855
Level of Service	C	D	D	D	F	C	C
Project ADT	63	63	72	14	10	88	90
Existing+Project ADT	23,186	23,186	9,003	8,945	23,467	2,930	1,372
Volume to Capacity	0.678	0.920	0.556	0.552	1.449	0.651	0.915
Level of Service	C	D	D	D	F	C	C
Direct Traffic Impact?	No	No	No	No	No	No	No
Cumulative Project's ADT	2,303	2,303	2,426	2,391	4,203	688	653
Ex+Proj+Cumulative ADT	25,489	25,489	11,429	11,336	27,670	3,588	2,025
Volume to Capacity	0.745	1.011	0.705	0.700	1.708	0.800	1.350
Level of Service	C	F	E	E	F	C	Worse than C
Cumulative Traffic Impact?	No	YES	YES	YES	YES	No	YES
Potential Mitigation	NA	4 Lane	2 + CTWLTL	2 + CTWLTL	4 Lane	NA	Widen to 40'
Measures	NA	Collector	Town Collector	Town Collector	Collector (Note2)	NA	Residential Collector
Capacity with Mitigaiton	NA	34,200	19,000	19,000	34,200	NA	4,500
Volume to Capacity	NA	0.745	0.602	0.597	0.809	NA	0.450
Level of Service	NA	C	D	D	D	NA	C

Notes: (1) Los Coches from approximately 400 feet south of Aurora Drive has 2 NB lanes and 1 SB Lane - ADT LOS calculation for 3 lanes in Attachment D.
(2) Mitigation identified in the Lake Jennings Marketplace EIR. CTWLTL: Center Two Way Left Turn Lane; NA= Not Applicable

CONCLUSIONS AND MITIGATION MEASURES

The proposed project (TM 5356) would not result in a degradation of the LOS of affected roadways. Los Coches Road (I-8 to 400' S. of Aurora Dr) is a Prime Arterial and has a current LOS of C (23,123 ± ADT). Los Coches Road (400' S. of Aurora Dr to Olde Highway 80) is a Prime Arterial and has a current LOS of D (23,123 ± ADT). Olde Highway 80 (Los Coches Road to Lake Jennings Park Road) is a Major Road and has a current LOS of D (8,931 ± ADT). Lake Jennings Park Road (Olde Highway 80 to I-8) is a Major Road and has a current LOS of F (23,457 ± ADT). East Lakeview Road (Olde Highway 80 to Adlai Road) is a non-circulation roadway and has a current LOS of C (2,844 ± ADT). Adlai Road (East Lakeview Road to the project access) is a non-circulation roadway and has a current LOS of C (1,282 ± ADT).

All currently available projects in the vicinity of the proposed project including fifty-five (55) cumulative projects, were included to address the cumulative impact on the roadway system. The traffic volume from the proposed project is 90 ADT (9 lots times 10 ADT/lot) and all other projects in the vicinity would ultimately result in five (5) cumulative traffic impacts because the project in combination with the cumulative projects exceed the San Diego County significance criteria. The cumulative traffic impacts were calculated on:

1) Los Coches Road from 400 feet south of Aurora Drive to Olde Highway 80 (25,489 ± ADT = LOS F),

2) Olde Highway 80 from Los Coches to East Lakeview Road (11,429 ± ADT = LOS E),

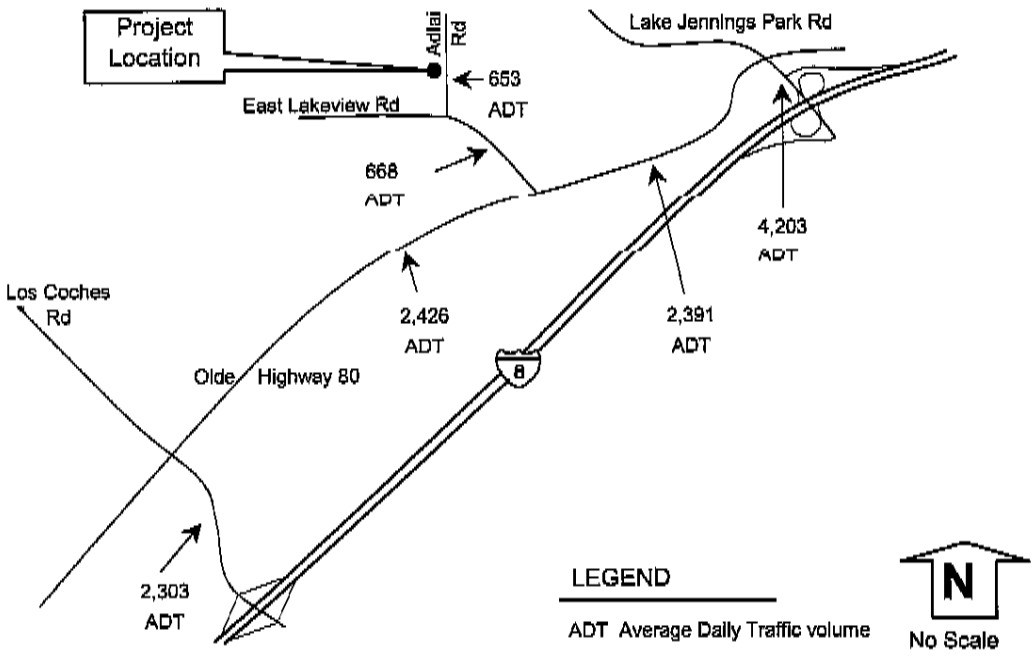

FIGURE 5: Cumulative Project Volumes

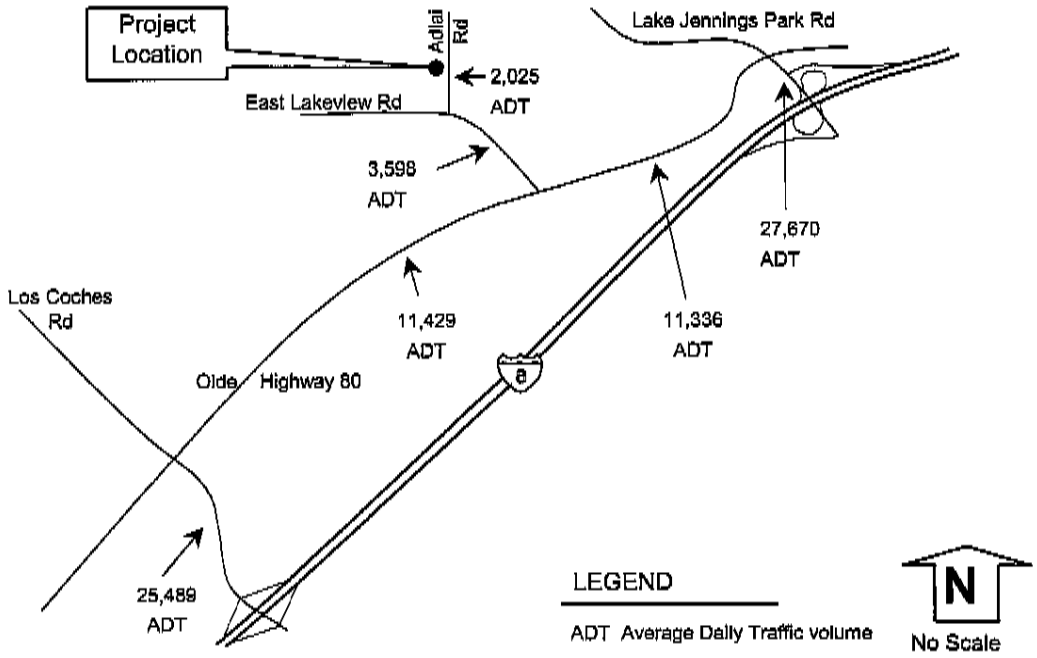

FIGURE 6: Existing + Cumulative + Project Traffic Volumes

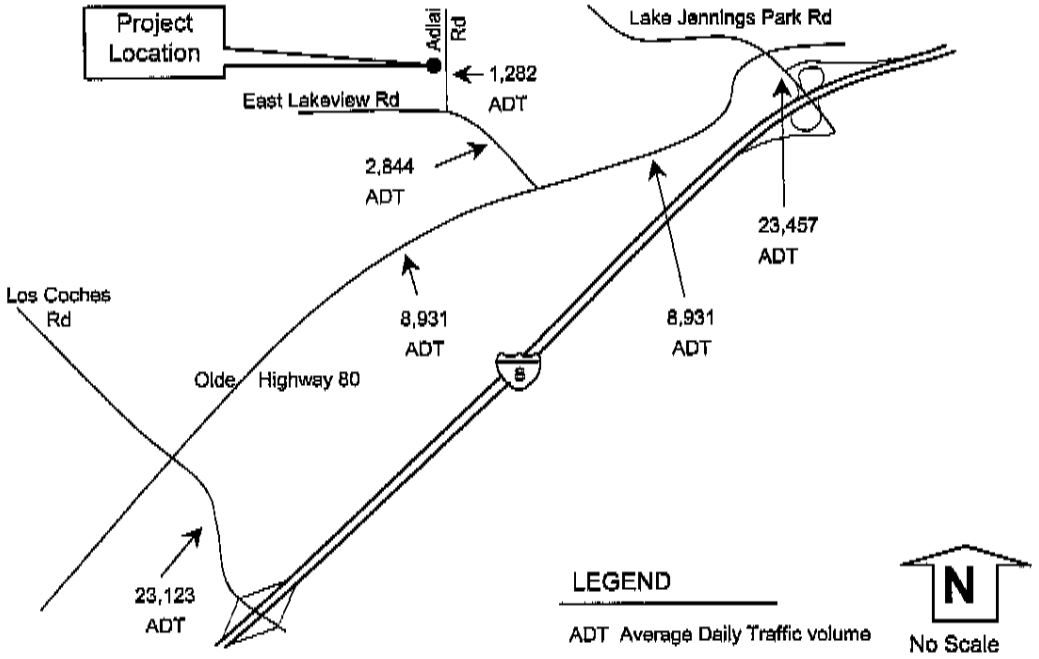

FIGURE 3: Existing Traffic Volumes

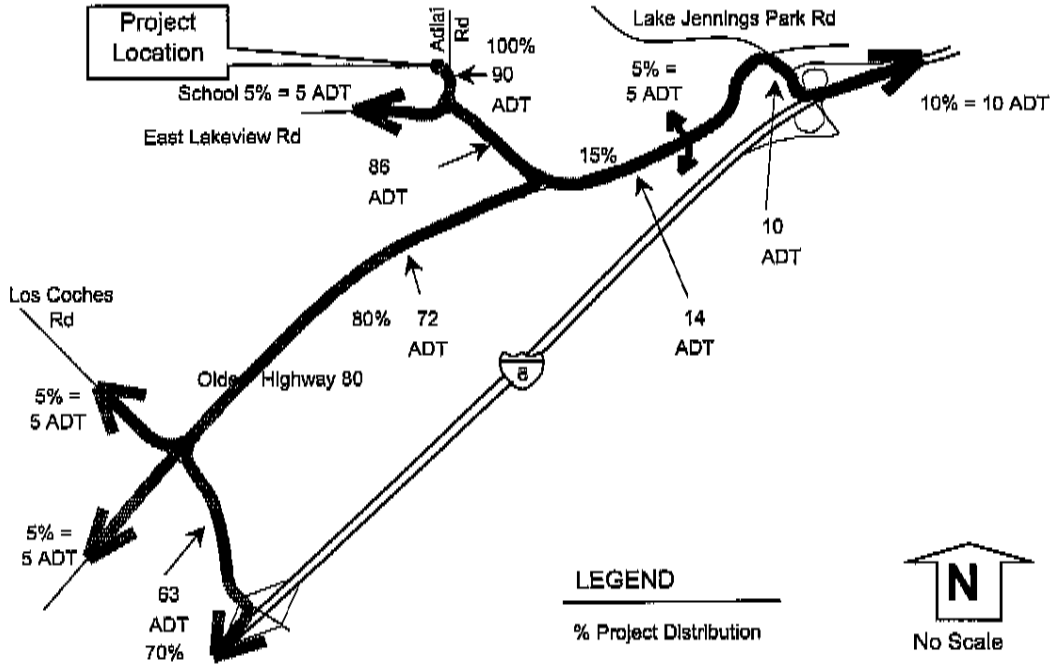

FIGURE 4: Project Traffic Distribution and Assignment

APPENDIX H

Sound 32 Data and Results

Sound32 Data and Results

Swaim Subdivision

Current Traffic Reference Information

Traffic Study for the Swaim Subdivision Project published by LOS Engineering Inc., dated February 23, 2005

- Los Coches Road from Interstate 8 to Old Highway 80
- Old Highway 80 from Los Coches Road to East Lakeview Road

Overall Roadway Traffic Information		
ROADWAY NAME	SPEED LIMIT	CURRENT ADT
Los Coches Road	40 mph	23123
Old Highway 80	45 mph	8931

Current Roadway Traffic Conditions					
Roadway Name	Condition	Total %	Autos (Hourly)	Medium (Hourly)	Heavy (Hourly)
		ADT			
Los Coches Road	Current	100	95.0%	4.0%	1.0%
		23123	1274	53	13
Old Highway 80	Current	100	95.0%	4.0%	1.0%
		8931	492	20	5

****

SOUND32 PROGRAM DATA FOR CALTRANS VERSION OF STAMINA2/OPTIMA

****

Current Traffic Volumes on Los Coches Road for Exterior Noise Levels

```
            * * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

 INPUT DATA FILE    : COCHES1.TXT
 BARRIER COST FILE  : CALIF$.DTA
 DATE               : 03-30-2005
```

COCHES1.TXT

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	1274	40	53	40	13	40	Los Coches

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	100.0	100.0	0.0	L1 P1
			500.0	100.0	0.0	L1 P2

BARRIER DATA

Barrier No. 1 Description: Curb
Type - (4)CONCRETE
Height Increment (DELZ)= 0.0 No. Height Changes (P)=0

SEG.	X	Y	GROUND (Z0)	TOP (Z)	BARRIER HEIGHTS AT ENDS
1	100.0	115.0	0.0	0.0 *B1 P1	* 0
	500.0	115.0	0.0	0.0 *B1 P2	* 0

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	300.0	135.0	5.0	67	500	R-1

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	R-1	67.	500.	70.2

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 0.0 DBA

****

Current Traffic Volumes Plus Additional Truck Traffic for Importation of Fill Material on Los Coches Road for Exterior Noise Levels

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : COCHES2.TXT
BARRIER COST FILE : CALIFS.DTA
DATE : 03-30-2005

COCHES2.TXT

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	1274	40	53	40	15	40	Los Coches

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	100.0	100.0	0.0	L1 P1
			500.0	100.0	0.0	L1 P2

BARRIER DATA

Barrier No. 1 Description: Curb
Type - (4)CONCRETE
Height Increment (DELZ)= 0.0 No. Height Changes (P)=0

SEG.	X	Y	GROUND (Z0)	TOP (Z)	BARRIER HEIGHTS AT ENDS
1	100.0	115.0	0.0	0.0 *B1 P1	* 0
	500.0	115.0	0.0	0.0 *B1 P2	* 0

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	300.0	135.0	5.0	67	500	R-1

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	R-1	67.	500.	70.3

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 0.0 DBA

****

Current Traffic Volumes on Old Highway 80 for Exterior Noise Levels

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : 80HWY1.TXT
BARRIER COST FILE : CALIF$.DTA
DATE : 03-30-2005

80HWY1.TXT

TRAFFIC DATA

LANE	AUTO		MEDIUM TRKS		HEAVY TRKS		
NO.	VPH	MPH	VPH	MPH	VPH	MPH	DESCRIPTION
1	492	45	20	45	5	45	Old Highway 80

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	100.0	100.0	0.0	L1 P1
			500.0	100.0	0.0	L1 P2

BARRIER DATA

Barrier No. 1 Description: Curb
Type - (4)CONCRETE
Height Increment (DELZ)= 0.0 No. Height Changes (P)=0

SEG.	X	Y	GROUND (Z0)	TOP (Z)	BARRIER HEIGHTS AT ENDS
1	100.0	115.0	0.0	0.0 *B1 P1	* 0
	500.0	115.0	0.0	0.0 *B1 P2	* 0

RECEIVER DATA

REC.

NO.	X	Y	Z	DNL	PEOPLE	ID
1	300.0	135.0	5.0	67	500	R-1

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	R-1	67.	500.	67.2

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 0.0 DBA

****

Current Traffic Volumes Plus Additional Truck Traffic for Importation of Fill Material on Old Highway 80 for Exterior Noise Levels

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : 80HWY2.TXT
BARRIER COST FILE : CALIF$.DTA
DATE : 03-30-2005

80HWY2.TXT

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	492	45	20	45	7	45	Old Highway 80

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	100.0	100.0	0.0	L1 P1
			500.0	100.0	0.0	L1 P2

BARRIER DATA

Barrier No. 1 Description: Curb
Type - (4)CONCRETE
Height Increment (DELZ)= 0.0 No. Height Changes (P)=0

	GROUND	TOP	BARRIER

SEG.	X	Y	(ZO)	(Z)	HEIGHTS AT ENDS
1	100.0	115.0	0.0	0.0 *B1 P1	* 0
	500.0	115.0	0.0	0.0 *B1 P2	* 0

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	300.0	135.0	5.0	67	500	R-1

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	R-1	67.	500.	67.4

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 0.0 DBA

****